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ABSTRACT

Two approaches to the study of long-term effects of different prekindergarten (pre-K) programs in the Austin (Texas) Independent School District (AISD) were studied. In one study, limited English proficient (LEP) students attending AISD kindergartens in 1981-82, 1982-83, and 1983-84 were followed to see if those who attended pre-K showed an advantage over those who did not in terms of achievement, retention, special education referrals, and LEP status. The AISD had 260 LEP kindergartners in 1981-82; 195 did not and 65 did attend pre-K. There was no consistent evidence of fewer retentions, lower rates of special education placement, or higher exit rates among the children attending pre-K. Long-term achievement of these pre-K students was not better. It is difficult to see why more positive effects were not seen for this pre-K program, but explanations may lie in the amount of time spent in instruction in English and Spanish. A second approach compared pre-K students from educationally disadvantaged and LEP groups with other students in the AISD at the same grade levels. Difficulties in finding an adequate comparison group limited the usefulness of conclusions. The importance of evaluating the effectiveness of pre-K programs makes better follow-ups imperative. A table showing scores of pre-K versus no pre-K LEP kindergarten students in reading, language and math is attached. (SLD)

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Longitudinal Effectiveness of Prekindergarten Programs: Different Approaches

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Objectives

In this paper, we will share:

1. The progress of limited-English-proficient students in AISD kindergarten in 1981-82, 1982-83, and 1983-84 who had and had not participated in the Title VII pre-K program the previous year;

2. The progress of students in AISD's Title VII, Title I, and Title I Migrant pre-K programs; and

3. Some of the methodological problems encountered in carrying out this longitudinal research.

Perspectives

Pre-kindergarten (Pre-K) is seen as a promising way to help disadvantaged students overcome learning deficits before formal K-12 schooling begins. Long-term follow-ups of programs such as the Ypsilanti project indicate pre-K can be a powerful preventative measure for these students. However, the nature of pre-K programs and the populations they serve varies considerably. This paper reports on two approaches to the study of the long-term effects of different prekindergarten programs in the Austin Independent School District (AISD).

Data can only be presented for students who still reside in AISD. The three prekindergarten programs studied were very different at the time of their implementation. Title I screened students to find the lowest achievers and used a locally-developed curriculum. Migrant did not screen students: all migrant students were accepted, and Migrant used a different curriculum from Title I. Title VII used the Primary Acquisition of Language (PAL) oral language proficiency test to screen students and then randomly selected limited-English-proficient (LEP) students; two English role models were also selected to participate, and the same curriculum as the Migrant curriculum was used. The prekindergarten program as it functions now in AISD is very different in many respects from these programs. Follow-ups will continue to be conducted on the more recent programs to ascertain if these programs have more or less lasting benefits.

LEP KINDERGARTEN FOLLOW-UP (PRE-K VERSUS NO PRE-K)

Procedure

This study followed the progress of LEP students attending AISD kindergarten in 1981-82, 1982-83, and 1983-84 to see if those who attended an AISD pre-K program the previous year showed an advantage over those who did not enter AISD until kindergarten in terms of:

---Achievement growth (fall of kindergarten to spring, 1987),
---Retention rates,
---Special education referrals,
---LEP status (dominance changes, exits at 23rd vs. 40th percentiles).

The group of LEP students who did not enter AISD until kindergarten probably included many of those who qualified for the pre-K program but were not randomly selected to participate. However, it also included some who were not living in Austin the previous year or who did live in Austin but did not apply. Those who did not apply may have stayed at home the previous year or may have participated in another pre-K or day care program. The groups are thus not comparable in all ways, but are reasonably close comparison groups. The file of those who qualified but were not chosen could not be located for use.

The following steps were taken.

1. A file was created which included all students identified as LEP in kindergarten in 1981-82, 1982-83, and 1983-84 except those listed as denying LEP service or as special education LEP. This file was merged with a pre-K file; students were separated into those who had and had not participated in an AISD pre-K program.

2. 1986-87 files were then checked for current LEP status, active status, and grade level (from the master file of all LEP students) plus all available test scores for the last six years (from the ITBS longitudinal file).

3. The Statistical Analysis Systems (SAS) package was utilized to generate a variety of information for those kindergarteners who had and had not participated in an AISD pre-K program (primarily through frequencies and tables). First, the number still active at the end of each year was determined. Next, for those still active in AISD at the end of 1986-87, the following information was determined:

   - Original and current (1986-87) LEP status,
   - Achievement scores for those exiting (23rd-39th percentile or 40th percentile in both reading and language),
   - Original and current LEP dominance,
   - Grade levels each spring through 1987,
   - Special education status,
   - Sex,
   - Ethnicity,
   - ITBS percentile scores in reading, language, and mathematics for several categories--
     1) No score
     2) Scores below the 7th percentile
     3) Scores between 7 and 22
     4) Scores between 23 and 39
     5) Scores at or above the 40th percentile.

These ranges were selected to reflect untestable and very low-level students (groups 1 and 2), low level students (group 3), students meeting minimum criteria to exit LEP status with other input (group 4), and students eligible to exit based on test scores only (group 5). LEP students are tested in AISD if the teacher believes the students know enough English to earn a valid score.

Percentile score ranges were run for all those still in AISD in 1986-87 and for those active each year. Percentile score ranges were also run separately for students never retained versus those retained one year. This was done to avoid mixing percentile scores for students tested on different levels on the tests. Invalid scores were counted as "no score."

One problem with identification numbers affected sample sizes slightly. In 1981-82 through 1985-86, temporary numbers were assigned to students initially and later changed to permanent numbers. If a kindergarten student still had a temporary number at the end of 1981-82, 82-83, or 83-84, he or she was lost because the number would not match that for 1986-87. Also, once students left the district, their numbers were sometimes re-used after a certain length of time. Checks were made of students who had an inappropriate or unlikely grade assignment to make sure they were the same students.

Results

Because of the large quantity of data generated for the three groups, the group we will focus on primarily here is the 1981-82 group (for which the longest follow-up is possible). General trends across the three groups will also be included here plus attachments with data on all groups.

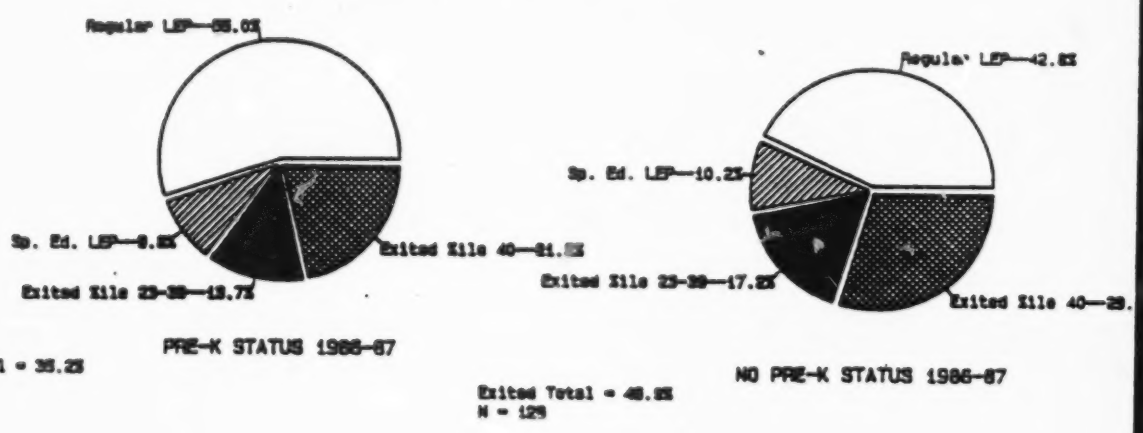
LEP and Special Education Status

AISD had 260 LEP students in kindergarten in 1981-82--195 had not attended pre-K in AISD the previous year and 65 had attended the program. Of those who attended AISD's Title VII pre-K program, 51 (78.5%) remained in AISD by 1986-87; of those who did not attend, 128 students (66%) remained. A similar pattern was evident in subsequent years, with students who participated in AISD pre-K somewhat more likely to still be in AISD for both 1982-83 (76% versus 65%) and 1983-84 (83% versus 69%).

Figure 1 shows the percentage of those still active from each group who are now:

- Still LEP and in the regular program,
- Special education LEP students, and
- Exited from LEP status.

FIGURE 1
1981-82 KINDERGARTEN FOLLOW-UP



Retention Rates

In both the 1981-82 pre-K and no pre-K groups, approximately 50% of the students were retained. Students should have been in grade 5 if not retained. The actual grade breakdowns for each of the 1981-82 groups is shown below.

	PRE-K		NO PRE-K	
	No.	Percent	No.	Percent
GRADE: 5	25	(49%)	64	(50%)
4	23	(45%)	63	(49%)
3	2	(4%)	1	(1%)
2	1	(2%)	0	(0%)
TOTAL:	51	(100%)	128	(100%)

In the 1982-83 group, 50% of the pre-K and 49% of the no pre-K group were retained. In the 1983-84 group, 43% of the pre-K and 47% of the no pre-K group were retained. **Thus, there is no consistent evidence that the pre-K program resulted in fewer retentions.** (See Attachment B-6.)

Special Education and LEP Status

Of students still in AISD, those attending the Title VII pre-K, compared to those not attending:

- Were referred to special education about as often (with 9.8% of the pre-K and 10.2% of the no pre-K group referred); and
- Exited LEP status less often (with 35% of the pre-K and 47% of the no pre-K group exiting).

In both groups, it was more common for students to exit with both percentile scores on the ITBS above 40 than with one or both between 23 and 39. Those exiting had been LEP for three to four years.

In the two previous years, special education rates were slightly lower for the pre-K than the no pre-K groups (15% vs. 17% for 1982-83 and 5% vs. 11% for 1983-84) but exit rates were lower as well.

Thus, there is no strong evidence that the pre-K group had lower rates of special education placement or higher exit rates (as would be expected if the program had a long-term impact). It is not known whether the fact that more of the pre-K group stayed in AISD impacted these results.

Dominance. If those served by pre-K tended to be dominant in Spanish more often than the no pre-K group, this might explain why fewer students exited. However, in the 1981-82 group, the pre-K group actually had fewer Spanish dominant students (33% versus 45%). Across time, both groups had more students become English dominant or balanced in both languages. However, the no pre-K group showed a greater degree of change (19% versus 14%). By 1986-87, 41% of the no pre-K and 50% of the pre-K group were English dominant. (It must be noted that students are often not retested until they are ready for exit, so these are very conservative estimates.) In the other two follow-up years, those served by pre-K tended to be Spanish dominant more often than the other group initially, and to show a greater change towards English dominance over time.

Achievement Patterns

The progress of all students in both groups who were active in AISD all five years was followed in reading, language, and mathematics (ITBS Total scores in each area were utilized). The achievement patterns for those not retained will be discussed here. The percentage of students showing performance in three categories was followed over time. This included those scoring:

- Below the 23rd percentile or not tested (it was assumed those not tested would have earned a low score because of limited Englisn ability);
- Between the 23rd and 39th percentile;
- At or above the 40th percentile.

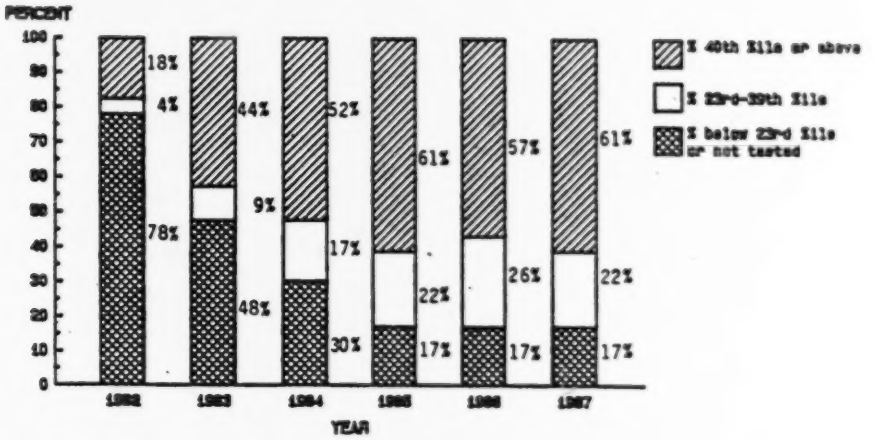
It was hoped that the percentage of students in both groups who scored below the 23rd percentile would decrease, while the percentage scoring above the 40tn percentile would increase, over time. If the pre-K program had long-term effects on achievement, pre-K groups would be expected to show larger changes over time.

Two points must be kept in mind in reviewing these results:

- Reading is not tested at the kindergarten level, and
- Even the first scores listed in each area are posttests since no scores are available at the pre-K level for both groups.

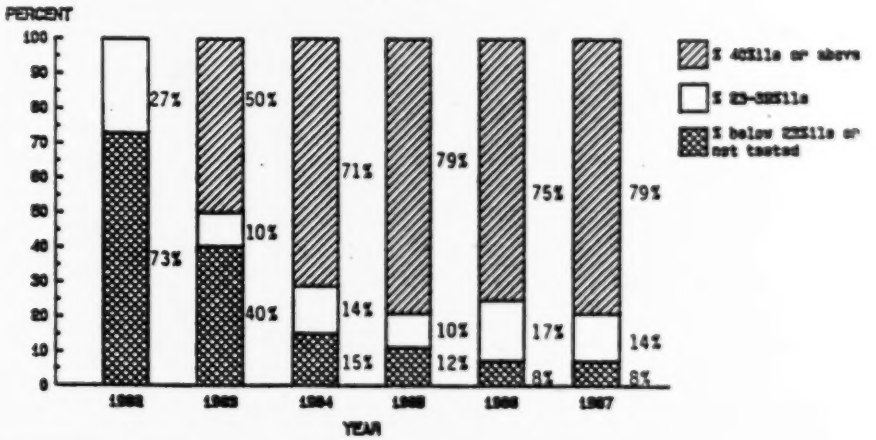
Both the pre-K and no pre-K groups showed the desired changes over time. Changes were most dramatic in language (see Figure B-2), with the percentage of students scoring above the 40th percentile rising 43.5% for pre-K and 51.9% for no pre-K students. Mathematics changes were more moderate, with a 30.4% increase in the above 40 category for pre-K and a 42.4% increase for no pre-K students. Reading percentages showed the smallest changes, with 4.3% more of the pre-K and 7.6% more of the no pre-K group scoring above 40. The percentages of scores in reading, language, and mathematics in each range for both 1981-82 kindergarten groups plus the percentage of change over time are shown in Figure B-3.

FIGURE 2
FOLLOW-UP ON 1981-82 KINDERGARTENERS -- LANGUAGE
TITLE VII PRE-K



N=423
ITBS LANGUAGE TOTAL PERCENTILES

NO PRE-K



N=82
Students promoted all years (in grade 2 in 1986-87)

Patterns were similar for the 1982-83 and 1983-84 kindergarten follow-up groups. (See Attachment 1 for complete frequencies on all three groups not retained.) In terms of scoring above the 40th percentile, the degree of change was more positive for the pre-K than the no pre-K group in only two of nine comparisons (in reading and mathematics for the 1982-83 group--in reading both groups declined in the percent of students scoring above 40). In terms of scoring below 23, larger decreases were seen for the pre-K versus the no pre-K group in three of nine comparisons.

Thus, pre-K students did not show better long-term achievement than did students not served. It is difficult to determine why more positive effects were not seen for the pre-K Title VII students. If time and resources permit, we hope to observe and document more fully the nature of the bilingual prekindergarten program as it now exists in AISD in the future. AISD's present program has had national recognition as exemplary and is quite different from the Title VII pre-K program. The amount of instruction provided in Spanish versus English would be one critical feature to document. Some national literature suggests that all instruction should be in the native language at this young age.

FIGURE 3
PERCENTAGE OF 1981-82 KINDERGARTEN LEP STUDENTS SCORING IN EACH OF FIVE PERCENTILE RANGES ON THE ITBS: PRE-K VS. NO PRE-K STUDENTS

Percentile Ranges Reading		Percent in Each Category 1982	1983	1984	1985	1986	1987	Change 1983-87
No Score or <23	Pre-K	NA	52.2	34.7	39.0	47.7	47.8	- 4.4
	No pre-K	NA	36.6	17.3	19.0	19.2	15.3	-21.3
23-39	Pre-K	-	21.7	43.5	30.4	26.1	21.7	0
	No pre-K	-	17.3	26.9	17.3	28.8	30.8	+13.5
≥40	Pre-K	-	26.1	21.7	30.4	26.1	30.4	+ 4.3
	No pre-K	-	46.2	55.8	63.5	51.9	53.8	+ 7.6
Language		1982	1983	1984	1985	1986	1987	Change 1982-87
No Score or <23	Pre-K	78.2	47.8	30.4	17.3	17.3	17.4	-60.8
	No pre-K	73.0	40.4	15.4	11.5	7.7	7.6	-65.4
23-39	Pre-K	4.3	8.7	17.4	21.7	26.1	21.7	+17.4
	No pre-K	-	9.6	13.5	9.6	17.3	13.5	+13.5
≥40	Pre-K	17.4	43.5	52.2	60.9	56.5	60.9	+43.5
	No pre-K	26.9	50.0	71.2	78.8	75.0	78.8	+51.9
Mathematics		1982	1983	1984	1985	1986	1987	Change 1982-87
No Score or <23	Pre-K	69.6	26.0	30.4	34.7	43.4	26.0	-43.6
	No pre-K	51.8	11.6	7.7	30.8	21.2	21.2	-30.6
23-39	Pre-K	13.0	8.7	21.7	8.7	13.0	26.1	+13.1
	No pre-K	19.2	11.5	11.5	5.8	13.5	7.7	-11.5
≥ 40	Pre-K	17.4	65.2	47.8	56.5	43.5	47.8	+30.4
	No pre-K	28.8	76.9	80.8	63.5	65.4	71.2	+42.4

The 23 pre-K and 52 no pre-K students included were active all five years in AISD and not retained.

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COMPARISONS OF THREE PRE-K PROGRAMS AND AISD STUDENTS

Procedure

Following national research (Schweinhart and Weikart, 1980) that indicated attendance in a good pre-K program can decrease special education placement, decrease retention rates, and decrease the need for special programs, we decided to see if our prekindergarten programs had made a difference in these areas.

All students in these analyses reflect only those students who were still in AISD in 1986-87.

Retention

Data was obtained for former prekindergarten students from 1980-81 as this represents the longest term data on the Title VII students. A longitudinal prekindergarten data file had been built beginning in 1978-79. The records of which students were in Title VII, Title I Migrant, and Title I 1980-81 prekindergarten programs were pulled from this file. Then these students' IDs were matched with the District's Student Master File in 1986-87. For the former 1980-81 pre-K students who were still in AISD in 1986-87, Student Master Files from 1981-82 through 1986-87 were accessed to get grade levels of the students for each of these years.

Special Education, Chapter 1, LEP Programs

A different approach was taken in examining this area. This time, the former pre-K students were compared with AISD students as a group at similar grade levels. Using the longitudinal prekindergarten data file, former Title I/ Chapter 1 prekindergarten (from 1978-79 to 1985-86) students, former Migrant prekindergarten (from 1978-79 to 1985-86), and former Title VII (from 1980-81 to 1982-83) students were accessed. These students' IDs were then matched with the 1986-87 District Student Master File. For those former prekindergarten students who were still in AISD in 1986-87 their IDs were matched with the District's Special Education File, Chapter 1 File, and LEP File. Counts of students who were being served by each of these programs in 1986-87 were then compiled.

Results

Retention

As can be seen from the figure on the following page, the former Title I students were the least likely to be retained while the former Title VII s students were the most likely to be retained. This may be more a reflection of limited-English proficiency rather than lower achievement levels.

NUMBER OF 1980-81 FORMER PRE-K STUDENTS WHO WERE RETAINED AT SOME POINT BY 1986-87

Prekindergarten Program in 1980-81	Number	Percent Retained
Title I	126	36%
Migrant	107	48%
Title VII	51	51%

Special Education, Chapter 1, LEP Programs

As can be noted from the figure below, the special education placement rates are lower than AISD for both the former Migrant and Title VII students while the rates are about the same for former Title I/Chapter 1 students. The former Migrant and Title VII students were more likely to be in a program for limited-English speakers than were the former Title I/Chapter 1 students or AISD students. This would be expected because both prekindergarten programs initially had a higher percentage of LEP students. The former prekindergarten students all were more likely to be served by Chapter 1 than were students districtwide. Because these prekindergarten programs were offered almost exclusively at Chapter 1 schools, these numbers are more likely to be reflective of the students' home attendance areas than solely of the students' achievement needs.

COMPARISON RATES FOR SPECIAL EDUCATION, CHAPTER 1, AND LEP PROGRAMS FOR FORMER PRE-K STUDENTS AND AISD, 1986-87

	Students Served By...		
Group	Special Education	Chapter 1	Bilingual ESL Program
Title 1/Chapter 1 former pre-K (1978-79--1985-86)	9.5%	20.7%	7.0%
Migrant former pre-K (1978-79--1985-86)	8.3%	18.3%	16.7%
Title VII former pre-K (1980-81--1982-83)	5.8%	24.6%	18.4%
AISD (grades K-7 students)	9.4%	15.0%	6.5%

More details are available in Christner, Rodgers, Fairchild, and Gutierrez (1987).

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Discussion

As more districts put money into prekindergarten as an effective tool to help low SES and non-English speaking students, it becomes imperative to evaluate longitudinal effectiveness of these programs. Since achievement is not the only outcome of interest, it is important to look at variables such as retention, length of time in bilingual programs, and participation in other special programs such as Chapter 1 and special education. This is a constantly evolving process because the prekindergarten programs as they exist now have evolved from earlier programs and the substantially different. Therefore, this must be an on-going process to see if these new programs are "better" than the old. Also by comparing programs and effectiveness we can identify one that is more effective and adjust the other programs accordingly.

Evaluating the longitudinal effectiveness of pre-K has involved trying to solve (or at least deal with) methodological and other problems:

- Limited time and resources. In 1986-87, these longitudinal follow-ups were written into our evaluation plans as part of the 1986-87 agenda. This was to the exclusion of other studies in other areas. Because longitudinal studies require a lot of people and computer time, we as an office can only do so much of this in addition to other regular evaluation tasks. For us, the desire is definitely there to do more, but the time and resources often are not.

- Changes in how data were collected over time. Current computer files and documentation of students in our District is excellent. This was not always the case. Our current systems have evolved over the last ten years. Our records were not nearly as good or exact in 1978-79, for instance. Student ID numbers (upon which we can match across computer files) were not always perfect a few years -- there were problems with temporary ID numbers, inaccurate coding, etc. Therefore, our information from the early years is not nearly as good as it is now. This of course limits the precision of our data.

- Constantly changing programs. When we talk about our three prekindergarten programs, we are talking about three initially very different programs. Two of the programs--Title VII and Migrant are no longer in existence. The one that remains--Chapter 1 (formerly title I) is different than when it first began in 1978-79. In addition, our state now has pre-K mandates that have greatly affected how these classes currently operate. This makes comparisons difficult at times because the programs are, at times, like chameleons.

- High student mobility. Many of our students move around a lot and many of our former prekindergarten students are no longer in AISD. We are limited in our follow-ups to just those students still in AISD. With limited resources we are not able to track students who have left our District. This is a deficit in our evaluations--not knowing why students left, how successful they are elsewhere, etc. A more ideal and complete evaluation would include tracking students wherever they are.

- Lack of Appropriate Comparison Group. Of our District's prekindergarten programs, only Title VII in its three years of existence had available a relatively similar comparison group of students who did not get the program. This was because Title VII was structured differently and randomly chose from screened students and had a limited number of classes. In the case of the other two programs (Chapter 1 and Migrant), it is different. All eligible Migrants were in a prekindergarten class. In Title I (Chapter 1) students were screened and only the lowest achieving students were served. Because we did not (back in 1978-79) capture a sample of similar kindergarten children coming into the same Title I schools with no prekindergarten experience we do not have an adequate comparison group. We have (in this paper) compared the three programs among themselves on retention and we have compared them to the whole District on the other variables. This second comparison was chosen because the goal of prekindergarten is to help disadvantaged students move into the mainstream (to alleviate the deficits of their early years) and the overall District average is one measure of this.

- Need for more comprehensive and extensive achievement analyses. This is an area that we will be focusing on more and more. Other than the Title VII analyses, what we did in 1986-87 on achievement follow-up was minimal. We opted to explore other variables. In 1987-88 we are planning more achievement analyses, especially focusing on looking at the groups by year, not just all clustered together by program.

We could continue this list even more. Quality longitudinal followups, especially of important programs like prekindergarten, are highly desirable. They are also difficult to do without lots of time and resources and a very good data base.

Attachment 1 (Page 1 of 3)

PERCENTAGE OF KINDERGARTEN LEP STUDENTS SCORING IN EACH OF FIVE PERCENTILE RANGES ON THE ITBS--PRE-K VERSUS NO PRE-K

Students Active All Five Years in AISD and Not Retained

READING

Kindergarten 81-82 (K82)		82	83	84	85	86	87	
	PK							
No	N = 23	100	34.8	13.0	4.3	4.3	4.3	
Score	No PK							
	N = 52	100	30.8	-	3.8	1.9	1.9	
1-6	PK	-	8.7	4.3	4.3	21.7	8.7	
	No	-	-	3.8	-	1.9	1.9	
7-22	PK	-	8.7	17.4	30.4	21.7	34.8	
	No	-	5.8	13.5	15.4	15.4	11.5	
23-39	PK	-	21.7	43.5	30.4	26.1	21.7	
	No	-	17.3	26.9	17.3	28.8	30.8	
≥ 40	PK	-	26.1	21.7	30.4	26.1	30.4	+
	No	-	46.2	55.8	63.5	51.9	53.8	+
K83			**READING**					
	PK							
No	N = 23	100	100	13.0	8.7	4.3	4.3	-
Score	No PK							
	N = 59	100	100	16.9	10.2	8.5	1.7	-
1-6	PK	-	-	4.3	21.7	-	17.4	+
	No	-	-	1.7	10.2	5.1	8.5	+
7-22	PK	-	-	39.1	26.1	30.4	17.4	-
	No	-	-	11.9	8.5	18.6	28.8	+
23-39	PK	-	-	17.4	17.4	39.1	39.1	+
	No	-	-	18.6	30.5	32.2	30.5	+
≥ 40	PK	-	-	26.1	26.1	26.1	21.7	-
	No	-	-	50.8	40.7	35.6	30.5	-
K84			**READING**					
	PK							
No	N = 22	100	100	100	40.9	-	22.7	-
Score	No PK							
	N = 81	100	100	100	16.0	11.1	3.7	-
1-6	PK	-	-	-	4.5	13.6	9.1	+
	No	-	-	-	4.9	8.6	4.9	0
7-22	PK	-	-	-	9.1	18.2	13.6	+
	No	-	-	-	27.2	25.9	22.2	-
23-39	PK	-	-	-	13.6	27.3	18.2	+
	No	-	-	-	13.6	14.8	21.0	+
≥ 40	PK	-	-	-	31.8	40.9	36.4	+
	No	-	-	-	38.3	39.5	48.1	+

Students Active All Five Years in AISD and Not Retained

LANGUAGE

Language (K82)		82	83	84	85	86	87	
No Score	PK N = 23	4.3	30.4	8.7	4.3	4.3	8.7	+
	No PK N = 52	9.6	30.8	-	3.8	1.9	1.9	-
1-6	PK	34.8	8.7	8.7	-	4.3	-	-
	No	19.2	7.7	-	-	-	1.9	-
7-22	PK	39.1	8.7	13.0	13.0	8.7	8.7	-
	No	44.2	1.9	15.4	7.7	5.8	3.8	-
23-39	PK	4.3	8.7	17.4	21.7	26.1	21.7	+
	No	-	9.6	13.5	9.6	17.3	13.5	+
≥ 40	PK	17.4	43.5	52.2	60.9	56.5	60.9	+
	No	26.9	50.0	71.2	78.8	75.0	78.8	+
K83			**LANGUAGE**					
No Score	PK N = 23	100	13.0	13.0	13.0	8.7	9.3	-
	No PK N = 59	100	22.0	15.3	8.5	8.5	1.7	-
1-6	PK	-	30.4	8.7	4.3	4.3	-	-
	No	-	30.5	1.7	13.6	-	-	-
7-22	PK	-	43.5	21.7	30.4	8.7	8.7	-
	No	-	37.3	20.3	8.5	11.9	16.9	-
23-39	PK	-	-	17.4	17.4	13.0	34.8	+
	No	-	3.4	11.9	16.9	10.2	20.3	+
≥ 40	PK	-	13.0	39.1	34.8	65.2	52.2	+
	No	-	6.3	50.8	52.5	69.5	61.0	+
K84			**LANGUAGE**					
No Score	PK N = 22	100	100	4.5	40.9	4.5	22.7	+
	No PK N = 81	100	100	8.6	24.7	12.3	7.4	-
1-6	PK	-	-	27.3	9.1	4.5	4.5	-
	No	-	-	33.3	2.5	4.9	2.5	-
7-22	PK	-	-	40.9	18.2	27.3	-	-
	No	-	-	35.8	12.3	7.4	8.6	-
23-39	PK	-	-	4.5	4.5	31.8	22.7	+
	No	-	-	8.6	9.9	23.5	9.9	+
≥ 40	PK	-	-	22.7	27.3	31.8	50.0	+
	No	-	-	13.6	50.6	51.9	71.6	+

87.24

Attachment 1
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Students Active All Five Years in AISD and Not Retained

MATHEMATICS

Mathematics (K82)		82	83	84	85	86	87
No Score	PK N = 23	-	4.3	8.7	4.3	4.3	4.3
	No PK N = 52	11.5	5.8	-	-	-	1.9
1-6	PK	43.5	4.3	-	-	17.4	4.3
	No	11.5	-	1.9	-	5.8	5.8
7-22	PK	26.1	17.4	21.7	30.4	21.7	17.4
	No	28.8	5.8	5.8	30.8	15.4	13.5
23-39	PK	13.0	8.7	21.7	8.7	13.0	26.1
	No	19.2	11.5	11.5	5.8	13.5	7.7
≥ 40	PK	17.4	65.2	47.8	56.5	43.5	47.8
	No	28.8	76.9	80.8	63.5	65.4	71.2
K83			**MATHEMATICS**				
No Score	PK N = 23	100	13.0	-	-	-	-
	No PK N = 59	100	22.0	1.7	3.4	5.1	1.7
1-6	PK	-	13.0	13.0	4.3	-	-
	No	-	13.6	-	-	1.7	6.8
7-22	PK	-	43.5	8.7	17.4	17.4	17.4
	No	-	40.7	11.9	18.6	30.5	13.6
23-39	PK	-	26.1	8.7	4.3	17.4	21.7
	No	-	13.6	16.9	18.6	18.6	22.0
≥ 40	PK	-	4.3	69.6	73.9	65.2	60.9
	No	-	10.2	69.5	59.3	44.1	55.9
K84			**MATHEMATICS**				
No Score	PK N = 22	100	100	4.5	4.5	-	9.1
	No PK N = 81	100	100	8.6	6.2	4.9	3.7
1-6	PK	-	-	13.6	9.1	13.6	4.5
	No	-	-	22.2	3.7	1.2	2.5
7-22	PK	-	-	27.3	4.5	13.6	36.4
	No	-	-	29.6	7.4	9.9	21.0
23-39	PK	-	-	13.6	18.2	18.2	13.6
	No	-	-	21.0	8.6	12.3	13.6
≥ 40	PK	-	-	40.9	63.6	54.5	36.4
	No	-	-	18.5	74.1	71.6	59.3

References

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